

A first aid team is dispatched to the fourth fairway via the fastest means of transport. The base station operator presses transmit on the unit causing an electronic key to be transmitted. The electronic key when received by the mobile transceiver unit unlocks an audio interlock at the mobile unit, switches off the audible alarm, and allows enquires as to nature of medical emergency.

A reply from the golf cart is heard by both the base station operator and a medical team who are monitoring the communications link between the golfer in need of medical assistance and the clubhouse. The base station operator alerts 911, if necessary.

Upon reaching the fourth fairway and the scene of emergency, the medical team commences treatment and advises the base station operator as to additional action required. At this point, the red beacon or audible alarm on the golf cart is turned off.

Once the golfer has been treated and moved, the base station operator is advised and resets the system for that particular golf cart.

In another embodiment, the mobile unit may include a means for identifying the location of the golfer such as a GPS receiver. A transmitter in the mobile unit may be equipped to send a signal indicative of a type of emergency and the location of the mobile unit to the fixed base station, such as shown in Figure 5. This signal may be repeatedly transmitted if no response from the fixed base station within a predetermined time period. The mobile unit may also include test and or reset circuitry for performing corresponding functions. In this embodiment, the fixed base station may include a receiver that decodes signals

from the mobile unit and relays them to a personal computer or other micro-processor based device. Software may also be included for displaying the type of emergency signal and position of the mobile unit. For example, the software may include an overlay of the particular golf course indicating the location of the mobile unit.

Further objects, features and advantages of the invention will become apparent from a consideration of the following description and the included claims when taken in connection with the previous discussion and the accompanying drawings. It should be appreciated that all software programs discussed in this patent application may be implemented by using modern engineering practices and electronic circuitry. The scope of this patent and the accompanying claims should be recognized as having hardware implementation that is equivalent to the software programs.

Brief Description of the Drawings

Figure 1 is a block diagram of a remote transceiver.

Figure 2 is a block diagram of a base station.

Figure 3 is a flowchart of software for the base station.

Figure 4 is a flowchart of software for the remote transceiver unit.

Figure 5 is a typical mobile keypad/transceiver layout sketch.

Detailed Description of the Invention

The following is the preferred embodiment or best mode for carrying out the invention. It should be noted that this invention is not limited by the discussion of the preferred embodiment.

Figure 1 depicts a remote unit 1 comprised of an existing transceiver circuit 7. The remote unit includes an audio interface comprised of a microphone and speaker. Microphone control circuitry is typical for existing transceivers and is not shown in the figure. Audio interlock circuitry 5 prevents a golfer from using the transceiver 7 to casually communicate with others. The audio interlock circuitry 5 controls the transmission ability of the remote unit 1 and enables the audio interface when the appropriate signal is received from the clubhouse. It should be noted that in this embodiment, the audio interlocking circuitry is shown as a separate component. However, the audio interlock may be implemented as a program in the micro-controller. If an enable signal is not sent from the clubhouse, then the golfer cannot conduct voice communications with anybody, so long as the transceiver 7 remains in the remote unit 1.

An antenna 9 is connected to the transceiver 7 for receiving and transmitting radio frequency signals. A micro-controller 11 with a software program continuously monitors the position of special function buttons 13. The special function buttons 13 correspond to various types of emergencies. As previously mentioned, the special function buttons 13 may be implemented through touch-screen technology.

The micro-controller 11 instantly recognizes when an operator depresses a special function button 13. After recognizing that a special function button has been depressed 13, the micro-controller 17 enables the transmitter (not shown) of the transceiver and causes a coded signal corresponding to the type of emergency to be transmitted to the clubhouse. The micro-controller 11 then monitors the receiver portion (not shown) of the transceiver for an audio interlock-enabling signal.

If an audio interlock-enabling signal is not received after a predetermined period, the micro-controller automatically retransmits the coded signal indicating that an emergency has occurred. After a predetermined number of unanswered transmissions, the micro-controller 11 alerts the operator of a system failure. At this point, the operator may remove the transceiver 7 from the remote transceiver unit 1 and try to establish a direct audio communications link with the clubhouse. A keypad 15 is electrically connected to the micro-controller for use in entering information such as the fairway number.

If the coded signal is successfully received by the transceiver 19 located in the clubhouse, the operator in the clubhouse will transmit a second coded signal to the transceiver 7 in the remote unit 1. The second coded signal transmitted includes a key for unlocking the audio interlock. Once the second coded signal is received and decoded by the micro-controller 11 in the remote unit 1, it unlocks the audio interlock and switches off the audible alarm, thereby promptly enabling an audio communications link to be established between the remote unit 1 and the fixed base unit 31. The golfer in need of assistance may then appropriately

relay information back to the clubhouse. If a medical emergency exists, the clubhouse can alert the appropriate medical authorities of the condition and relay any lifesaving information to the golfer. If the emergency is a mechanical one, such as operational failure of a golf cart, the clubhouse can send a mechanic along with a substitute golf cart so that the golfer may continue playing his round of golf.

A power source is necessary for operating the remote unit 1 but not shown in the drawing. The power source may be comprised of an independent battery source or may include power connections to the battery supplying the golf cart. Other alternative sources of power may include solar cells mounted in an appropriate arrangement on a golf cart. It should also be noted that the existing transceiver circuit might include an additional microphone and speaker not shown in the figures.

The housing or retrofit kit of the remote unit 1 is constructed in a manner such that a golfer can easily operate the keypad 15 and special function buttons 13. The micro-controller 11 controls the routing of signals via switches so that signals to be transmitted are sent to the transmitter and received signals are decoded and interpreted as commands or sent to the speaker. The transmitted coded signals are typically transmitted by a tone pulse width method commonly used in remote control systems. Various other types of known coding of signals may be used for implementing this invention.

Figure 2 is a block diagram of the base station 31. The transceiver audio interface 17 comprising the microphone and speaker shown in figure 2 perform

similar functions as those mentioned above with respect to Figure 1. The micro-controller 23 includes a program for receiving coded messages and converting them to be displayed on a display screen 25. The micro-controller 23 may include a list of options for responding to different types of emergencies. These options may be listed on the display 25 when the operator is alerted to the emergency. A personnel alarm system 41 is linked to the display 25 for providing other alarms to alert personnel of the emergency. The personnel alarm system 41 may be linked to the micro-controller 23 or transceiver 17. For example, if a golfer transmits a signal indicative of a life-threatening emergency, the screen may provide the telephone numbers of the local ambulance service and hospital. It may also include first aid information that may be automatically relayed to the golfer or relayed via the operator.

A power supply 21 for converting alternating current to direct current is provided in the base station 31. Special function buttons 29, such as a system reset, is included in the base station 31. A keypad 27 for input and program control may also be included in the base station 31. Alternatively, the display 25 may comprise touch screen technology for input and program control. Typically, the base station 31 consists of the above-mentioned parts contained in a housing.

Figure 3 depicts a software flowchart for the base station 31. The micro-controller 23 continuously monitors the input from the receiver to see whether a coded signal has been received from the transmitter of a remote transceiver unit

1. If a coded signal is received, the micro-controller 23 decodes the signal and

sounds an alert. Simultaneously, the type of emergency is displayed on the display 25 of the fixed base station 31.

An operator of the base station 31 then transmits an audio enable signal to the remote transceiver unit 1. Instructions for handling the emergency may also be transmitted at this time. Alternatively, the operator may question the golfer for more details about the type of emergency. The display screen 25 may show emergency numbers and suggest courses of actions for handling the emergency. The base station 31 may be equipped with a dial-up feature that automatically dials emergency numbers and relays information to the appropriate authorities. An audio communications link between the base station 31 and the remote transceiver unit 1 is maintained during the entire emergency condition unless another emergency situation arises from another golfer. After the emergency situation has been resolved, the operator of the base station resets the base station 31 and sends a reset signal to the remote transceiver unit 1 that transmitted the emergency.

If a second emergency situation arises during the first emergency, the base station 31 prioritizes the emergencies according to the seriousness of each situation. Each remote transceiver unit 1 is reset after each emergency is resolved. This same protocol is followed for multiple emergencies.

Figure 4 depicts a software flowchart for the remote transceiver unit 1. The micro-controller 11 continuously monitors the special function buttons 13 if the unit is equipped with them. If the unit is equipped with a touch screen, the micro-controller 11 will monitor the appropriate sections of the screen. When a

special function button 13 is depressed, the golfer is cued by the micro-controller 11 to input the fairway number. After the fairway number is input via the keypad, 15 a coded message comprised of information indicating the type of emergency and the location of the golfer, is transmitted to the base station 31. The remote transceiver unit 1 receives a coded message comprising an unlock code from the base station 31. Once the unlock code has been decoded in the micro-controller 11 unit of the remote transceiver unit 1, audio communications are established between the base station 31 and the remote controller unit 1. In an alternative embodiment, the remote transceiver unit 1 automatically unlocks the audio interlock circuitry after a special function button 13 has been depressed. The remote transceiver unit 1 resets the audio interlock when a coded signal is sent from the base station 31.

Figure 5 depicts a layout for a typical remote transceiver unit. Use instructions 47 are provided on the remote transceiver unit 1. An light emitting diode (LED) or liquid crystal display (LCD) are provided for indicating the fairway number may also be provided on the remote transceiver unit 1. Buttons 45 are provided for inputting information such as the fairway number on which the players are golfing. Button 41 is a special function button for alerting the clubhouse that a medical emergency has occurred. Button 43 is a special function button for alerting the clubhouse when a mechanical failure has occurred. Other special function buttons may be provided on the remote transceiver unit 1 for performing other alert or non-alert functions.

It is to be understood that the invention is not limited to the exact construction illustrated and described above. Various changes and modifications may be made without departing from the spirit and the scope of the invention as defined in the following claims.

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